CLAIMS:

1.   A noise-shaping device (20, 30) comprising at least one device (DM, Q) for producing an output signal, where the output signal is produced based on an input signal and a predictive signal.

5   2.   The noise-shaping device (20, 30) of claim 1, where the predictive signal is produced based on one or more past values of the output signal.

3.   The noise-shaping device (20, 30) of claim 1, wherein the at least one device (DM) is a decision-making circuit.

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4.   The noise-shaping device (20, 30) of claim 1, wherein the at least one device (Q) is a quantizer.

5.   The noise-shaping device (20, 30) of claim 1, further comprising a predictive

15   filter (A(z)) for producing a predicted future value of the output signal based on one or more past values of the output signal and supplying the predicted future value of the output signal to the at least one device (DM, Q).

6.   The noise-shaping device (20, 30) of claim 5, the predictive filter (A(z))

20   including a weighting coefficient (β) for weighting the predicted future value of the output signal prior to being input to the at least one device (DM, Q).

7.   The noise-shaping device (20, 30) of claim 6, wherein when the weighting coefficient is infinitely large, the output signal of the at least one device (DM, Q) is based

25   only on an output of the predictive filter (A(z)).

8.   The noise-shaping device (20, 30) of claim 1, further comprising a loop filter (H(z)) for providing the input signal, where the input signal is filtered by the loop filter (H(z)).

9.   The noise-shaping device (20, 30) of claim 1, wherein the noise-shaping device (20, 30) is a look-ahead sigma-delta modulator.

10.   The noise-shaping device (20, 30) of claim 9, wherein the look-ahead sigma-delta modulator minimizes a cost function, which is a function of an output of a loop filter (H(z)), an output of a prediction filter (A(z)) and a previous output.

11.   The noise-shaping device (20, 30) of claim 9, wherein the look-ahead sigma-delta modulator is a trellis sigma-delta modulator.

12.   The noise-shaping device (20, 30) of claim 11, wherein the trellis sigma-delta modulator minimizes a cost function, which is a function of an output of a loop filter (H(z)), an output of a prediction filter (A(z)) and a previous output.

13.   The noise-shaping device (20, 30) of claim 9, wherein the look-ahead sigma-delta modulator is an efficient trellis sigma-delta modulator.

14.   The noise-shaping device (20, 30) of claim 13, wherein the efficient trellis sigma-delta modulator minimizes a cost function, which is a function of an output of a loop filter (H(z)), an output of a prediction filter (A(z)) and a previous output.

15.   A method, comprising:
        - receiving an input signal and a predictive signal;
        - weighting the predictive signal; and
        - producing an output signal, based on the input signal and the weighted predictive signal, where the output signal is a function of the input signal and the predictive signal and the predictive signal represents a future value of the output signal based on one or more past values of the output signal.